



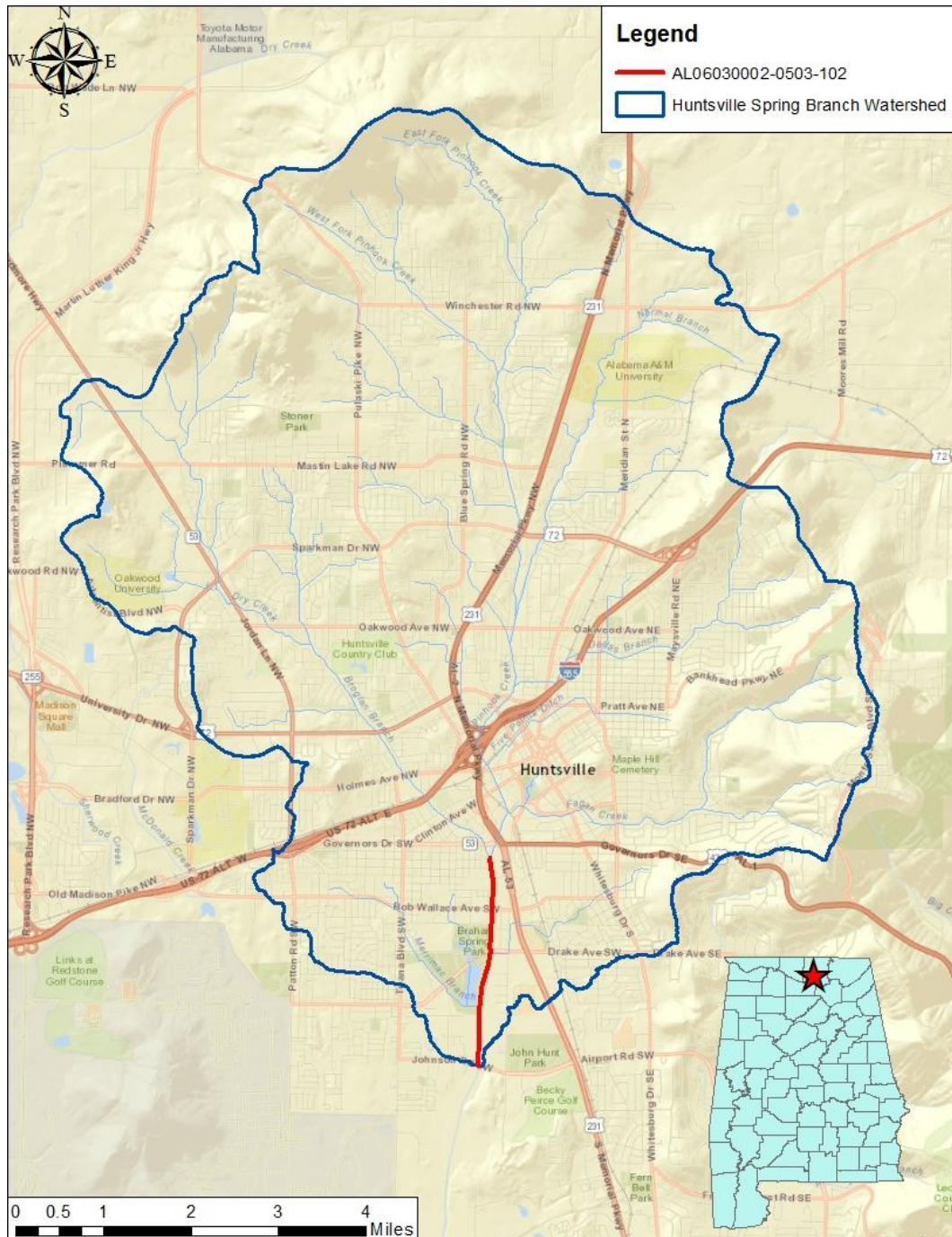
**Draft  
Delisting Decision  
for  
Huntsville Spring Branch**

Waterbody ID AL06030002-0503-102

**Metals (Hg)**

Alabama Department of Environmental Management  
Water Quality Branch  
Water Division  
November 2017

## Huntsville Spring Branch Watershed Map in the Tennessee River Basin



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## ***1.0 Executive Summary***

Huntsville Spring Branch, located in Madison County, is a part of the Tennessee River Basin. Huntsville Spring Branch originates in central Madison County and flows southwest into Indian Creek on the Redstone Arsenal. The §303(d) list states that Huntsville Spring Branch is impaired for metals (Mercury) from Johnson Road (Huntsville Field) to Broglan Branch for a length of 1.98 miles. Huntsville Spring Branch has a use classification of Fish & Wildlife (F&W).

In 1998, Huntsville Spring Branch was originally listed for metals on the State of Alabama's §303(d) list. According to ADEM's 1996 §305(b) Report, a 1995 Tennessee Valley Authority (TVA) fish and macroinvertebrate assessment of Huntsville Spring Branch was the reason for initially listing it as being impaired for metals. Huntsville Spring Branch was not analyzed for metals in 1995 with the TVA fish and macroinvertebrate assessment; therefore, it was assumed the low assessment scores were due to metals. Huntsville Spring Branch has subsequently been listed on Alabama's 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, and 2016 §303(d) lists of impaired waterbodies.

In 2014, ADEM collected chemical and physical data at station HSBM-242A. Of the eight low-level mercury samples collected for Huntsville Spring Branch, all were either below minimum detection limits or less than the applicable water quality criteria. This additional data has been acquired for Huntsville Spring Branch to assess its ability to meet applicable water quality standards. The data indicates that Huntsville Spring Branch, from Johnson Road (Huntsville Field) to Broglan Branch, now fully supports its use classification with respect to metals (Hg).

The following report addresses the results of the delisting analysis of Huntsville Spring Branch for metals (Hg). Based on an assessment of all available data, ADEM has determined that a water quality impairment due to metals (Hg) does not exist. Therefore, ADEM will not develop a TMDL due to "more recent or accurate data," which is just cause for delisting a waterbody according to Title 40 of the Code of Federal Regulations (CFR), Part 130.7(b)(6)(iv).

## **2.0 Basis for §303(d) Listing**

### **2.1 Introduction**

Section 303(d) of the Clean Water Act (CWA), as amended by the Water Quality Act of 1987 and EPA's Water Quality Planning and Management Regulations [Title 40 of the Code of Federal Regulations (CFR), Part 130], requires states to identify waterbodies which are not meeting water quality standards applicable to their designated use classifications. The identified waters are prioritized based on severity of pollution with respect to designated use classifications. TMDLs for all pollutants causing violation of applicable water quality standards are established for each identified water. Such loads are established at levels necessary to implement the applicable water quality standards with seasonal variations and margins of safety. The TMDL process establishes the allowable loading of pollutants, or other quantifiable parameters for a waterbody, based on the relationship between pollution sources and in-stream water quality conditions, so that states can establish water-quality based controls to reduce pollution from both point and non-point sources and restore and maintain the quality of their water resources (USEPA, 1991).

The 2016 §303(d) list states that Huntsville Spring Branch (AL06030002-0503-102) is impaired for a length of 1.98 miles from Johnson Road (Huntsville Field) to Broglan Branch. In 1998, Huntsville Spring Branch was originally listed for metals on the State of Alabama's §303(d) list. According to ADEM's 1996 §305(b) Report, a 1995 Tennessee Valley Authority (TVA) fish and macroinvertebrate assessment of Huntsville Spring Branch was the reason for initially listing it as being impaired for metals. Huntsville Spring Branch was not analyzed for metals in 1995 with the TVA fish and macroinvertebrate assessment; therefore, it was assumed the low assessment scores were due to metals. Huntsville Spring Branch has a use classification of Fish & Wildlife (F&W).

## **3.0 Technical Basis for Delisting Decision**

### **3.1 Water Quality Target Identification**

According to ADEM's Water Quality Criteria (Administrative Code 335-6-10-.07), both acute and chronic aquatic life criteria and human health (consumption of fish only) criteria are applicable for waterbodies classified as Fish and Wildlife. For mercury, the freshwater acute aquatic life criterion is 2.1 µg/l and the freshwater chronic aquatic life criterion is 0.012 µg/l. The human health criterion for consumption of fish only is 0.042 µg/l; the equation used to calculate this criterion can be found in Appendix 6.3.

### **3.2 Source Assessment**

#### **3.2.1 Point Sources in the Huntsville Spring Branch Watershed**

##### **Continuous Point Sources**

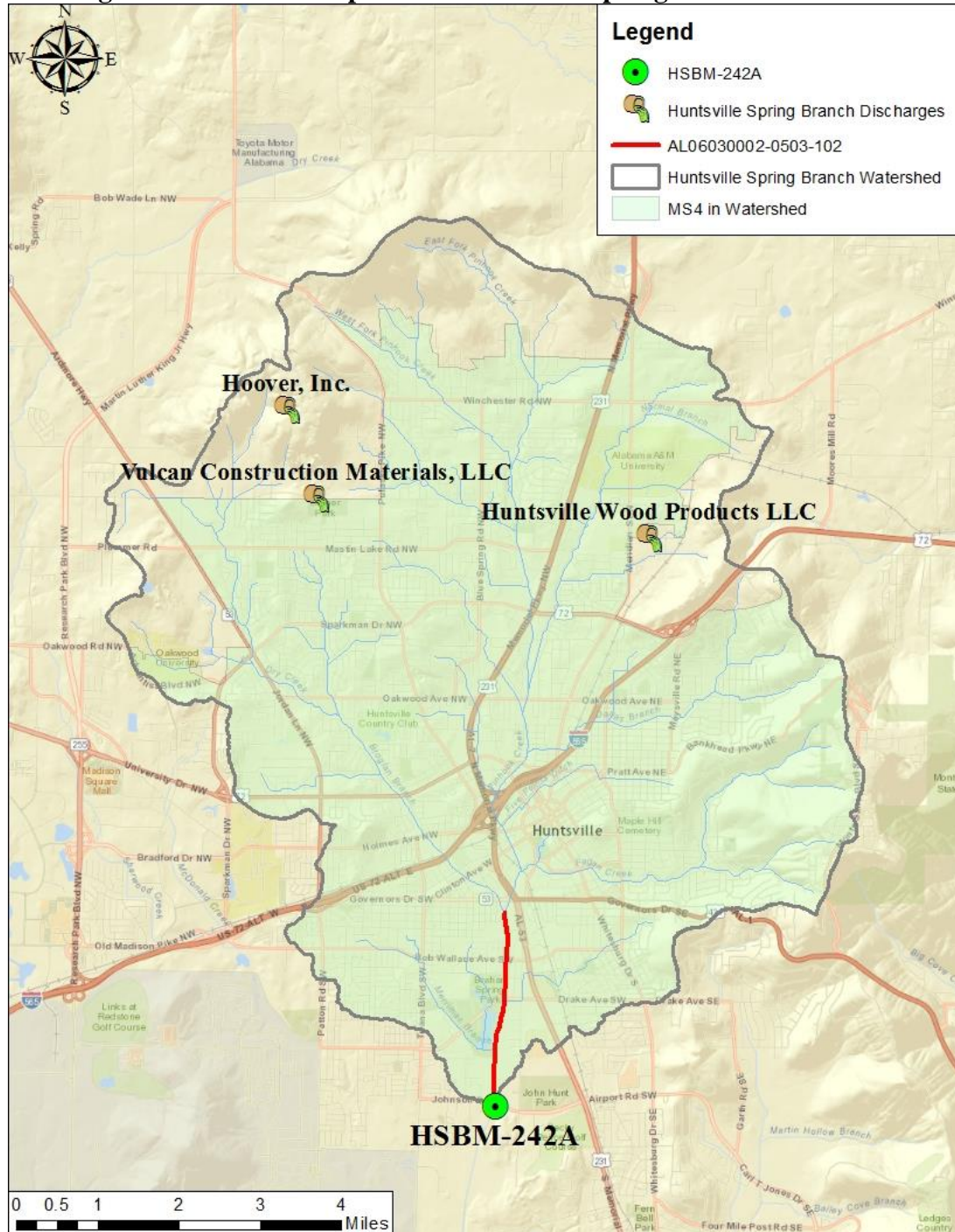
There are three point sources in the Huntsville Spring Branch watershed: Huntsville Wood Products LLC (AL0067041); Hoover, Inc. (AL0054933); and Vulcan Construction Materials, LLC (AL0055964). Figure 3-1 shows the locations of these facilities.



### Non-Continuous Point Sources

There are 21 industrial general permits and no CAFOs located in the Huntsville Spring Branch watershed. Currently, 79% of the Huntsville Spring Branch watershed qualifies as a Municipal Separate Storm Sewer System (MS4) area.

**Figure 3-1. Source Map for the Huntsville Spring Branch Watershed**



**Table 3-1. Sources for the Huntsville Spring Branch Watershed**

Name	Permit Number	Type
Huntsville Wood Products, LLC	AL0067041	Industrial
Hoover, Inc.	AL0054933	Mining
Vulcan Construction Materials, LLC	AL0055964	Mining

### 3.2.2 Nonpoint Sources in the Huntsville Spring Branch Watershed

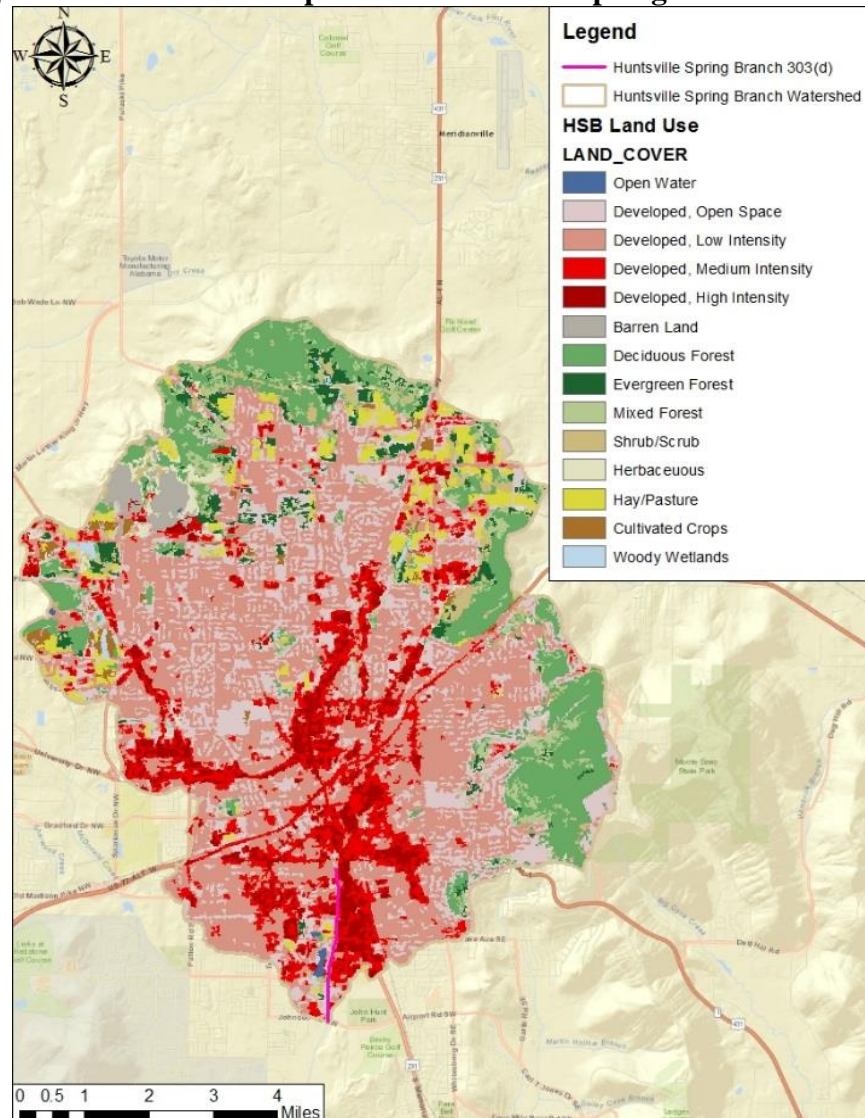
From review of the data collected on Huntsville Spring Branch, it is believed that nonpoint sources are not causing or contributing to mercury issues in Huntsville Spring Branch.

## **3.3 Land Use Assessment**

Land use for the Huntsville Spring Branch watershed was determined using ArcMap with land use datasets derived from the 2011 National Land Cover Dataset (NLCD). Figure 3-2 and Table 3-2 display the land use areas for the Huntsville Spring Branch watershed. Figure 3-3 is a graph depicting the primary land uses in the Huntsville Spring Branch watershed.

The majority of the Huntsville Spring Branch watershed is developed land (71.5%) and forested/natural (23.98%). Other major land uses within the watershed are agriculture land (approximately 4.4%) and minimal open water. Developed land includes both commercial and residential land uses.

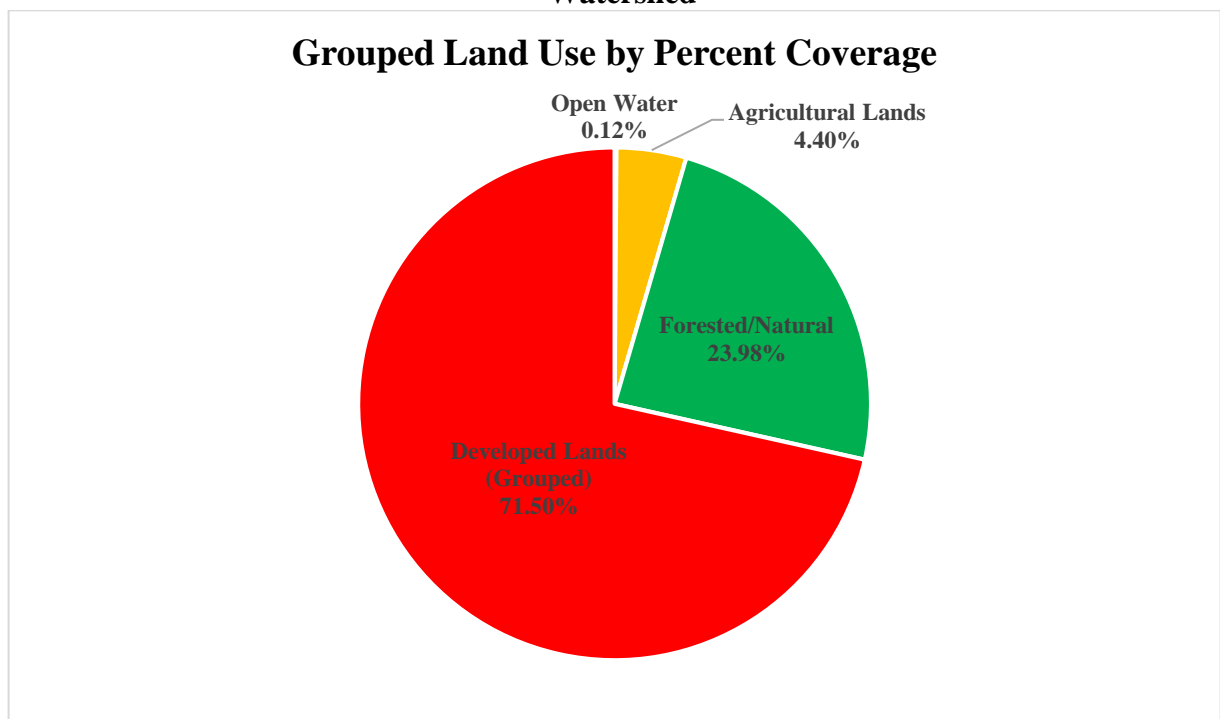
**Figure 3-2. Land Use Map for the Huntsville Spring Branch Watershed**



**Table 3-2. Land Use Areas for the Huntsville Spring Branch Watershed**

<b>Class Description</b>	<b>Mi<sup>2</sup></b>	<b>Acres</b>	<b>Percent</b>
Open Water	0.05	31.58	0.12%
Developed, Open Space	7.98	5108.96	19.07%
Developed, Low Intensity	15.28	9777.98	36.49%
Developed, Medium Intensity	4.43	2837.40	10.59%
Developed, High Intensity	2.24	1435.71	5.36%
Barren Land	0.57	363.88	1.36%
Deciduous Forest	5.31	3398.12	12.68%
Evergreen Forest	1.12	714.85	2.67%
Mixed Forest	1.34	856.98	3.20%
Shrub/Scrub	1.11	708.18	2.64%
Herbaceous	0.45	288.92	1.08%
Hay/Pasture	1.45	925.04	3.45%
Cultivated Crops	0.40	253.34	0.95%
Woody Wetlands	0.15	95.86	0.36%
<b>TOTALS →</b>	<b>41.87</b>	<b>26796.80</b>	<b>100%</b>
<b>Class Description</b>	<b>Mi<sup>2</sup></b>	<b>Acres</b>	<b>Percent</b>
Open Water	0.05	31.58	0.12%
Agricultural Lands	1.84	1178.38	4.40%
Forested / Natural	10.04	6426.79	23.98%
Developed Land (Grouped)	29.94	19160.05	71.50%
<b>TOTALS →</b>	<b>41.87</b>	<b>26796.8</b>	<b>100.00</b>

**Figure 3-3. Graph of Primary Land Uses in the Huntsville Spring Branch Watershed**





### 3.4 Data Availability and Analysis

It should be noted that even though Huntsville Spring Branch was sampled prior to 2014, only the data that is approximately six years in age or less and has a method detection limit below the applicable criteria will be used in this analysis, which is consistent with Alabama's Water Quality Assessment and Listing Methodology (ADEM, 2016).

The source of data that was utilized in the evaluation of Huntsville Spring Branch is from ADEM's 2014 §303(d) sampling program. Both physical and chemical data were collected at the following sampling station: HSBM-242A. This data can be found in Appendix 6.2. Refer to Table 3-4 for a location description of the aforementioned sampling station and to Figure 3-4 for a map depicting the location of the sampling station.

Both acute and chronic aquatic life criteria and the human health criterion are evaluated when assessing the water quality data. The most stringent water quality target among the criteria is listed in Table 3-3 for analytical comparison.

In 2014, ADEM collected 8 low-level mercury samples at HSBM-242A. Of the 8 samples collected, there were no mercury violations. Based on a review of the data, ADEM determined that the mercury criteria were not exceeded in any samples. Please refer to Tables 3-3 and 3-5 for a summary of the metals (Hg) results.

**Table 3-3 Summary of 2014 Metals Analysis for Huntsville Spring Branch**

Station ID	Visit Date	Hg Tot Low Level (ng/l) <sup>1</sup>	Hg Tot Low Level dc	Hg Chronic Freshwater Aquatic Life Criteria (ng/l)
HSBM-242A	4/22/2014	7.07		12.0
HSBM-242A	5/20/2014	1.58	< MDL 1.58	12.0
HSBM-242A	6/10/2014	3.05		12.0
HSBM-242A	7/7/2014	1.58	< MDL 1.58	12.0
HSBM-242A	8/19/2014	1.58	< MDL 1.58	12.0
HSBM-242A	9/15/2014	1.58	< MDL 1.58	12.0
HSBM-242A	10/30/2014	1.58	< MDL 1.58	12.0
HSBM-242A	11/20/2014	1.58	< MDL 1.58	12.0
Notes: MDL = Method Detection Limit 1 - EPA Analytical Method 1631E used				

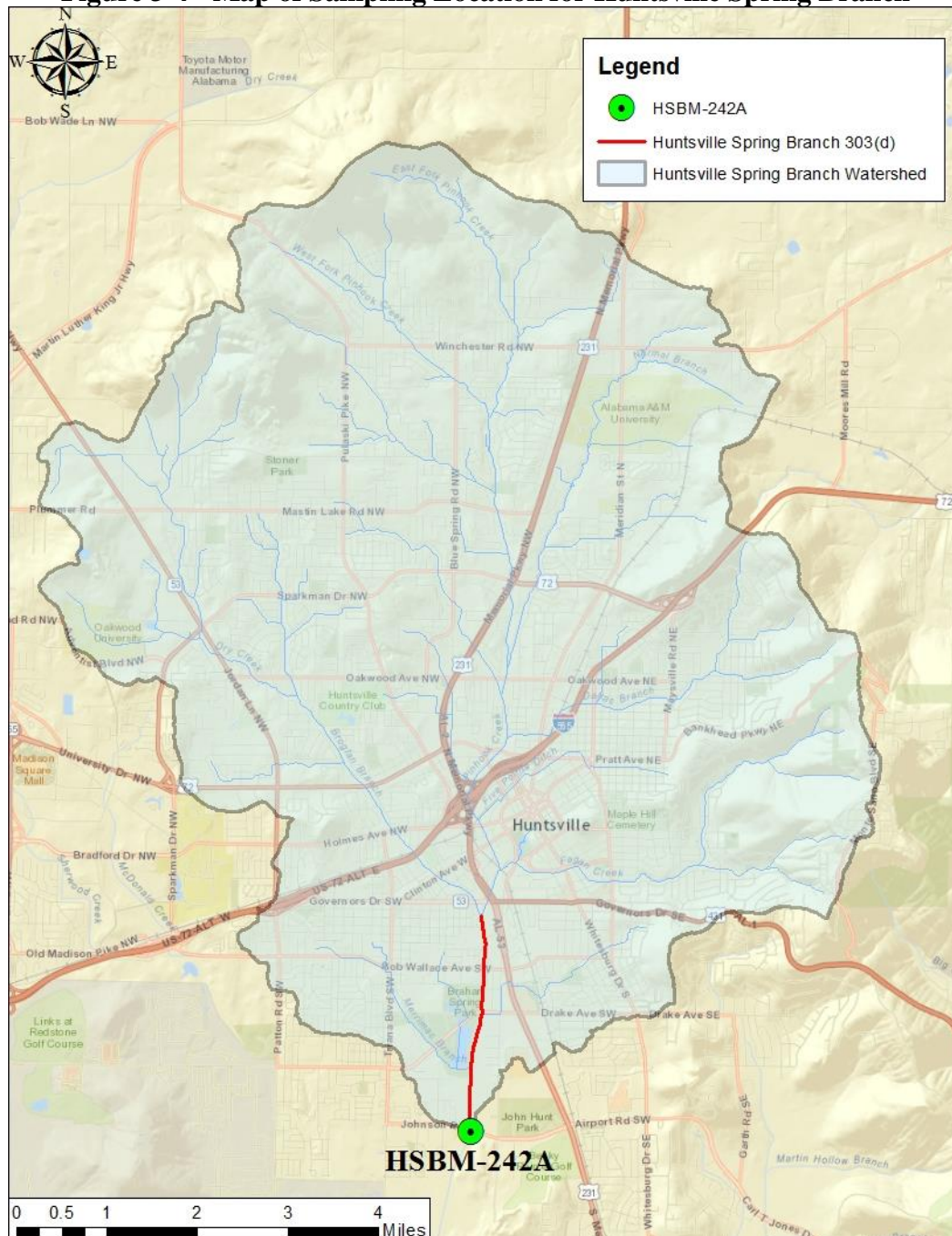
**Table 3-4 Huntsville Spring Branch Sampling Station**

Station	Latitude	Longitude	Description
HSBM-242A	31.0161	-87.5136	Huntsville Spring Branch at Johnson Road

**Table 3-5 Summary of 2014 Huntsville Spring Branch Metals (Hg) Results**

Station	Metal	Total # of Samples Collected	Total # of Violations	% of Violations	Support Status
HSBM-242A	Hg	8	0	0	Full

**Figure 3-4 - Map of Sampling Location for Huntsville Spring Branch**



## ***4.0 Conclusions***

From examination of all available data, ADEM has determined that a water quality impairment due to metals (Hg) does not currently exist within Huntsville Spring Branch. Therefore, ADEM will not develop a TMDL due to “more recent data,” which is a just cause for delisting waterbodies according to Title 40 of the Code of Federal Regulations (CFR), Part 130.7(b)(6)(iv).

## ***5.0 Public Participation***

As part of the public participation process, this Delisting Decision (DD) will be placed on public notice and made available for review and comment. A public notice will be prepared and published in the major daily newspapers in Montgomery, Huntsville, Birmingham, and Mobile, as well as submitted to persons who have requested to be on ADEM’s postal and electronic mailing distributions. In addition, the public notice and subject DD will be made available on ADEM’s Website: [www.adem.state.al.us](http://www.adem.state.al.us). The public can also request hard or electronic copies of the DD by contacting Ms. Kimberly Minton at 334-271-7826 or [kminton@adem.alabama.gov](mailto:kminton@adem.alabama.gov). The public will be given an opportunity to review the DD and submit comments to the Department in writing. At the end of the comment period, all written comments received during the public notice period will become part of the administrative record. ADEM will consider all comments received by the public prior to final completion of this DD and subsequent submission to EPA Region 4 for final approval.

## **Appendix 6.1**

### **References**

ADEM Administrative Code, 2017. Water Quality Program, Chapter 335-6-10, Water Quality Criteria, and Chapter 335-6-11 Use Classifications for Interstate and Intrastate Waters.

Alabama Department of Environmental Management's §303(d) Monitoring Program. 2014.

Alabama Department of Environmental Management (ADEM). Alabama's Water Quality Assessment and Listing Methodology, 2016.

United States Environmental Protection Agency. 1991. Guidance for Water Quality-Based Decisions: The TMDL Process, Office of Water, EPA 440/4-91-001.

## Appendix 6.2 Water Quality Data

### Data from §303(d) Monthly Sampling Station at HSBM-242A

Station ID	Visit Date & Time	Flow cfs	Dissolved Oxygen mg/l	pH su	Turbidity ntu	Hardness mg/l	Conductivity Âµmhos/cm	Temp.Water c
HSBM-242A	11/28/2001 14:30		11.6	8.4	3.6	184	245	21
HSBM-242A	1/10/2002 10:20		10.5	7.4	2.2	180	256	11.8
HSBM-242A	1/23/2002 15:40		10.8	7.3	201	156	240	18
HSBM-242A	2/13/2002 10:05		13.1	7.9	3.3	174	245	12
HSBM-242A	4/3/2002 10:15		9.9	8.2	3.1	170	260	13
HSBM-242A	4/25/2002 10:00		11.2	8.1	4.4	156	220	16
HSBM-242A	5/23/2002 10:13		10.1	8	6	176	300	21.9
HSBM-242A	6/13/2002 10:00		7.1	7.8	17.6	156	300	24
HSBM-242A	2/24/2004 11:30	72.6	14	8.2	1.7		264	15.1
HSBM-242A	6/11/2009 9:52	330	9.9	7.7	3		306.3	23.1
HSBM-242A	3/19/2013 17:32	89.4	13	8.5	2.9	150	298.8	18.1
HSBM-242A	4/2/2013 13:19	96.9	16.3	8.7	1.4	165	321.9	14.9
HSBM-242A	5/9/2013 12:03	118.7	13.7	8.3	2	160	324.2	20.4
HSBM-242A	6/11/2013 13:24			8.4	1.7	135	299	27.6
HSBM-242A	7/17/2013 10:03		9.5	7.4	2.4	159	327	24
HSBM-242A	8/6/2013 13:10		7.1	7.8	39.4	63.7	135.3	25.4
HSBM-242A	9/12/2013 10:05		9.4	7.9	2.1	153	313.8	24.9
HSBM-242A	10/15/2013 13:42		15.4	8.5	2.8	141	288.5	22.7
HSBM-242A	3/26/2014 13:15		15.3	8.4	1	165	334	15.7
HSBM-242A	4/16/2014 14:10	79.1	14.6	8.3	1.2	169	303	19
HSBM-242A	4/22/2014 10:25	69.7	4.8	7.9	1.9		333.7	18.8
HSBM-242A	5/7/2014 13:45	78.7	14.5	8.3	1.1	231	255	25.2
HSBM-242A	5/20/2014 9:56	47.6	11.3	8	2.3		337.2	20.2
HSBM-242A	6/10/2014 10:39	202.4	9.6	7.9	10.2		339.5	20.5
HSBM-242A	6/11/2014 13:10	921	11.3	7.9	11.2	136.8	280	23.1
HSBM-242A	7/7/2014 14:38	43	12.5	7.9	1.4		303	29.1
HSBM-242A	7/16/2014 14:00	29.3	14.4	8.4	1.9	146	310	27
HSBM-242A	8/13/2014 13:30	20.7	14.7	8.2	1.7	150	285	27.7
HSBM-242A	8/19/2014 9:47	40.2	9.2	7.8	6		269	24.4
HSBM-242A	9/3/2014 14:00	20.2	15.1	8.3	1.6	136.9	282	30.5
HSBM-242A	9/15/2014 15:03	16.7	14.8	8.3	1.6		281.8	26.6
HSBM-242A	10/15/2014 14:00	81.9	10.2	7.9	2.5	185.8	367	18
HSBM-242A	10/30/2014 13:22	25.9	14	8.2	1		327.6	18.3
HSBM-242A	11/20/2014 15:04	39.4	13.1	7.8	1.2		340.6	14.8



**Data from §303(d) Monthly Sampling Station at HSBM-242A Continued**

Station ID	Visit Date & Time	Solids, Total Dissolved mg/l	Solids, Total Dissolved mg/l DC	Solids, Total Suspended mg/l	Solids, Total Suspended mg/l DC	Hg, Dissolved ug/l	Hg, Dissolved ug/l DC	Hg, Total LL ng/l	Hg, Total LL ng/l DC
HSBM-242A	11/28/2001 14:30			5		0.3	< MDL .3		
HSBM-242A	1/10/2002 10:20			4		0.3	< MDL .3		
HSBM-242A	1/23/2002 15:40			9		0.3	< MDL .3		
HSBM-242A	2/13/2002 10:05			3		0.3	< MDL .3		
HSBM-242A	4/3/2002 10:15			4		0.3	< MDL .3		
HSBM-242A	4/25/2002 10:00			3		0.3	< MDL .3		
HSBM-242A	5/23/2002 10:13			11		0.3	< MDL .3		
HSBM-242A	6/13/2002 10:00			35		0.3	< MDL .3		
HSBM-242A	2/24/2004 11:30	149		9					
HSBM-242A	6/11/2009 9:52								
HSBM-242A	3/19/2013 17:32	188		1		0.057	< MDL .057		
HSBM-242A	4/2/2013 13:19	194		2		0.057	< MDL .057		
HSBM-242A	5/9/2013 12:03	220		1					
HSBM-242A	6/11/2013 13:24	166		2	JH				
HSBM-242A	7/17/2013 10:03	182		2					
HSBM-242A	8/6/2013 13:10	81		15					
HSBM-242A	9/12/2013 10:05	181		1					
HSBM-242A	10/15/2013 13:42	147		2					
HSBM-242A	3/26/2014 13:15	203		1	< MDL 1				
HSBM-242A	4/16/2014 14:10	200		5					
HSBM-242A	4/22/2014 10:25							7.07	
HSBM-242A	5/7/2014 13:45	183		2					
HSBM-242A	5/20/2014 9:56							1.58	< MDL 1.58
HSBM-242A	6/10/2014 10:39							3.05	
HSBM-242A	6/11/2014 13:10	174		7					
HSBM-242A	7/7/2014 14:38							1.58	< MDL 1.58
HSBM-242A	7/16/2014 14:00	176		4					
HSBM-242A	8/13/2014 13:30	160	JQ	1	JQ				
HSBM-242A	8/19/2014 9:47							1.58	< MDL 1.58
HSBM-242A	9/3/2014 14:00	161		2					
HSBM-242A	9/15/2014 15:03							1.58	< MDL 1.58
HSBM-242A	10/15/2014 14:00	218		2					
HSBM-242A	10/30/2014 13:22							1.58	< MDL 1.58
HSBM-242A	11/20/2014 15:04							1.58	< MDL 1.58

## Appendix 6.3

### Equations for Calculating Human Health Criteria

(i) Consumption of water and fish:

$$\text{conc. (mg/l)} = (\text{HBW} \times \text{RfD} \times \text{RSC}) / [(\text{FCR} \times \text{BCF}) + \text{WCR}] \quad \text{(Eq. 1)}$$

(ii) Consumption of fish only:

$$\text{conc. (mg/l)} = (\text{HBW} \times \text{RfD} \times \text{RSC}) / (\text{FCR} \times \text{BCF}) \quad \text{(Eq. 2)}$$

where: HBW = human body weight, set at 70 kg

RfD = reference dose, in mg/(kg-day)

FCR = fish consumption rate, set at 0.030 kg/day

BCF = bioconcentration factor, in l/kg

WCR = water consumption rate, set at 2 l/day

## **Appendix 6.4**

### **Huntsville Spring Branch Station Photos**



**Photo 1 – HSBM-242A Looking Upstream**



**Photo 2 – HSBM-242A Looking Downstream**